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Hardness Indentation Studies on Metallic Glasses

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Vickers micro-hardness indentations have been performed on aluminum based metallic glass and devitrified aluminum based metallic glass. Effects of indentation load on the hardness will be discussed for the fully amorphous and devitrified material. AFM has been performed on different indentations to examine height differences between shear bands around the indentations and to examine the elastic rebound. The effect of devitrification on the indentation size and appearance will be discussed. In addition, Vickers micro-hardness indentations at elevated temperatures were performed on a zirconium based metallic glass. The effects of changes in temperature on both micro-hardness and deformation patterns observed with SEM and AFM will be discussed. Work supported by DARPA SAM Program through ARO-DAAD19-01-0525 and Boeing Company with supply of materials by W.L. Johnson and G. Shiflet.